5.5 Drought Hazard

A major drought hazard event has been determined to have a **Medium** likelihood of occurrence in Benton County within the five-year planning cycle of this Plan. Therefore, although some hazard characterization information is presented below, no further risk assessment has been performed for drought hazards. Additional analyses to further characterize the risks of this hazard and the development of suitable mitigation action items will be conducted in the future based on periodic reviews of this hazard mitigation plan and available resources

5.5.1 Nature of the Hazard

The term *drought* is applied to a period in which an unusual scarcity of rain causes a serious hydrological imbalance: water-supply reservoirs empty, wells dry up, and crop damage ensues. The severity of the drought is gauged by the degree of moisture deficiency, its duration, and the size of the area affected. If the drought is brief, it is known as a dry spell, or partial drought. A partial drought is usually defined as more than 14 days without appreciable precipitation, whereas a drought may last for years.

Washington has a statutory definition of drought, consisting of two parts:

1) An area has to be experiencing or projected to experience a water supply that is below 75 percent of normal.
2) Water users within those areas will likely incur undue hardships as a result of the shortage.

Drought is a normal, recurrent feature of climate. It occurs in virtually all climate zones, but its characteristics vary significantly from one region to another. Drought is a temporary occurrence; it differs from aridity, which is restricted to low rainfall regions and is a permanent feature of climate. A drought is therefore different from a dry climate.

Historical Events

The State's most severe drought episode occurred in 1977, when many of the current records for low precipitation, snow accumulation (e.g. snowpack), and stream flow totals were set. The more recent 2001 drought turned out to be the second-worst drought year in state-recorded history. By mid-March 2001, most of Washington was suffering a water supply deficit. Federal, state and local officials worried that low river flows would disrupt state energy production. Dwindling water supplies put various threatened and endangered fish species at risk. The state also experienced severe economic strain on its agricultural, municipal and industrial sectors due to the drought.

In the last century, there have been a number of drought episodes in eastern Washington, including several that have lasted for more than a single season, such as the dry periods between 1928-32 and 1992-94. The primary affects of these droughts have been economic – affecting agriculture and the population in general due to energy curtailments.

The worst national drought in 50 years affected at least 35 states during the summer of 1988. In some areas the lack of rainfall dated back to 1984. In 1988, rainfall totals over the mid-west, Northern Plains and the Rockies were 50 percent to 85 percent below normal. Crops and livestock

died and some areas were affected by desertification. Forest fires began over the Northwest and by autumn, 4,100,000 acres had been destroyed.

Characteristics of the Hazard

Drought originates from a deficiency of precipitation over an extended period of time, usually a season or more. This deficiency results in a water shortage for some activity, group, or environmental sector. Drought should be considered relative to some long-term average condition of balance between precipitation and evapotranspiration in a particular area, a condition often perceived as "normal." It is also related to the timing (i.e., principal season of occurrence, delays in the start of the rainy season, occurrence of rains in relation to principal crop growth stages) and the effectiveness (i.e., rainfall intensity, number of rainfall events) of the rains. Other climatic factors such as high temperature, high wind, and low relative humidity are often associated with it in many regions of the world and can significantly aggravate its severity.

Droughts tend to be more severe in some areas than in others. Catastrophic droughts generally occur at latitudes of about 15°-20°, in areas bordering the permanently arid regions of the world. In North America, archaeological studies of Native Americans and statistics derived from long-term agricultural records show that six or seven centuries ago whole areas of the Southwest were abandoned by the indigenous agriculturists because of repeated droughts and were never reoccupied. The statistics indicate that roughly every 22 years—with a precision of three to four years—a major drought occurs in the United States, most seriously affecting the Prairie and mid-western states.

5.5.2 Hazard Assessment

Hazard Identification

To be determined.

Vulnerability Assessment

Benton County is vulnerable to drought, despite its proximity to the Yakima and Columbia River system and extensive irrigation networks. Approximately 68 percent of the county land is in agricultural use, and 79 percent of that is dry cropland and rangeland (e.g., non-irrigated land).

Risk Analysis

The principal effects of drought are economic losses due to the impact on agricultural businesses. Farm owners, tenants, and workers are affected by reduced crop yield and feed for range animals.

A risk assessment has not been conducted for this hazard.

5.5.3 Community Concerns

Current Conditions

To be determined.

Ongoing Mitigation

The State of Washington has developed a statewide Drought Contingency Plan (Annex Z2 of the Washington State Comprehensive Emergency Management Plan). The State Drought Contingency Plan focuses on water supply impacts resulting from hydrological, rather than meteorological, drought. Water supply monitoring and forecasting responsibilities are given to the Water Supply Availability Committee (WSAC), which is chaired by the Department of Ecology. In Washington, the Department of Ecology is the agency responsible for water resources, water rights, and irrigation issues. The WSAC meets at least once every other month.

The WSAC advises the governor to convene the Executive Water Emergency Committee (EWEC), responsible for assessing the overall impacts from a drought and coordinating the state's response, when at least one area of the state is likely to receive less than 75 percent of its normal water supply. It is the EWEC, chaired by a representative of the governor's office, that determines when any of the eight task forces under its control should be activated. These task forces assess the impacts of a drought and suggest appropriate responses to the EWEC. Washington's Drought Contingency Plan addresses two important issues: pre-drought preparation and post-drought recovery and evaluation. Preparation is important so that each agency understands its responsibilities before a drought occurs, and the EWEC meets once a year to review the preparedness of the state to deal with a drought. Post-drought evaluation is important so that weaknesses in the plan, such as individual agency responses, can be identified and corrected before the next drought.

5.5.4 Mitigation Strategies

To be determined.

5.5.5 Resources

State Resources

Washington State Drought Contingency Plan
Washington has a specific plan for responding to drought conditions. The general process involves activating specific committees that:

- Monitor water supply conditions.
- Make assessments about the likely impacts of a drought episode.
- Develop programs for addressing the various, identified drought effects.

State Department of Ecology, Water Resources
www.ecy.wa.gov

Federal Resources

National Oceanic Atmospheric Administration (NOAA)

www.drought.noaa.gov

Climate Prediction Center
On each Thursday, the CPC, together with the United States Department of Agriculture, the National Drought Mitigation Center in Lincoln, Nebraska, and NOAA's National Climatic Data Center, issues a weekly drought assessment called the United States Drought Monitor. The Monitor provides a consolidated depiction of national drought conditions based on a combination of drought indicators and field reports. The CPC issues the Seasonal United States Drought Outlook each month in conjunction with the Thursday release of the long-lead temperature and precipitation outlooks near the middle of the month.
www.cpc.ncep.noaa.gov

Other Resources

National Drought Mitigation Center
The National Drought Mitigation Center (NDMC) helps people and institutions develop and implement measures to reduce societal vulnerability to drought, stressing preparedness and risk management rather than crisis management. Most of the NDMC's services are directed to state, federal, regional, and tribal governments that are involved in drought and water supply planning. The NDMC, established in 1995, is based in the School of Natural Resource Sciences at the University of Nebraska–Lincoln. The NDMC's activities include maintaining an information clearinghouse; drought monitoring; drought planning and mitigation; drought policy; advising policy makers; collaborative research; K–12 outreach; workshops for federal, state, and international governments and organizations; organizing and conducting seminars, workshops, and conferences; and providing data to and answering questions for the media and the general public.
www.drought.unl.edu